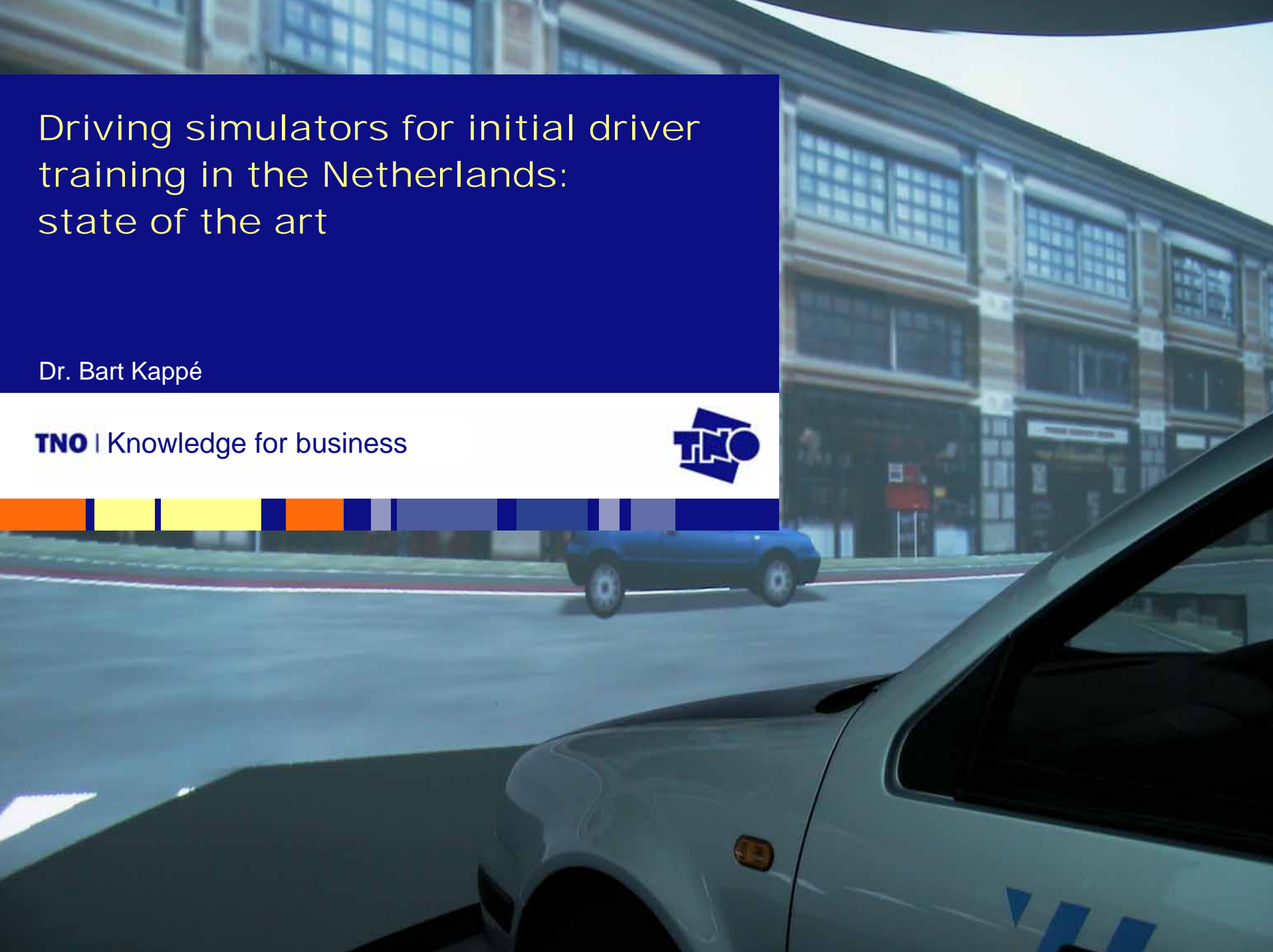


# Driving simulators for initial driver training in the Netherlands: state of the art

Dr. Bart Kappé

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# Driving simulators for initial driver training in the Netherlands

- Some one-liners
- Simulators in the Netherlands
- Discussion & conclusions

# Driving simulators in the Netherlands

## One-liners

- Ultimate realism is a fata morgana
  - Will never be reached
  - Very expensive
  - Wrong focus
- Required realism varies
  - Task
  - Trainee
  - Use of simulator

# Driving simulators in the Netherlands

## One-liners

- Driving simulator is like a learning book
  - Size of the letters, number of pages?
  - Content!
- Hardware less important
  - A requirement to allow training
  - Multiple configurations possible
- Software is vital
  - Traffic, scenarios
  - Instruction
- **Didactics are crucial**
  - A tool for learning
  - Didactical value = economical value

# Driving simulators in the Netherlands

## One-liners

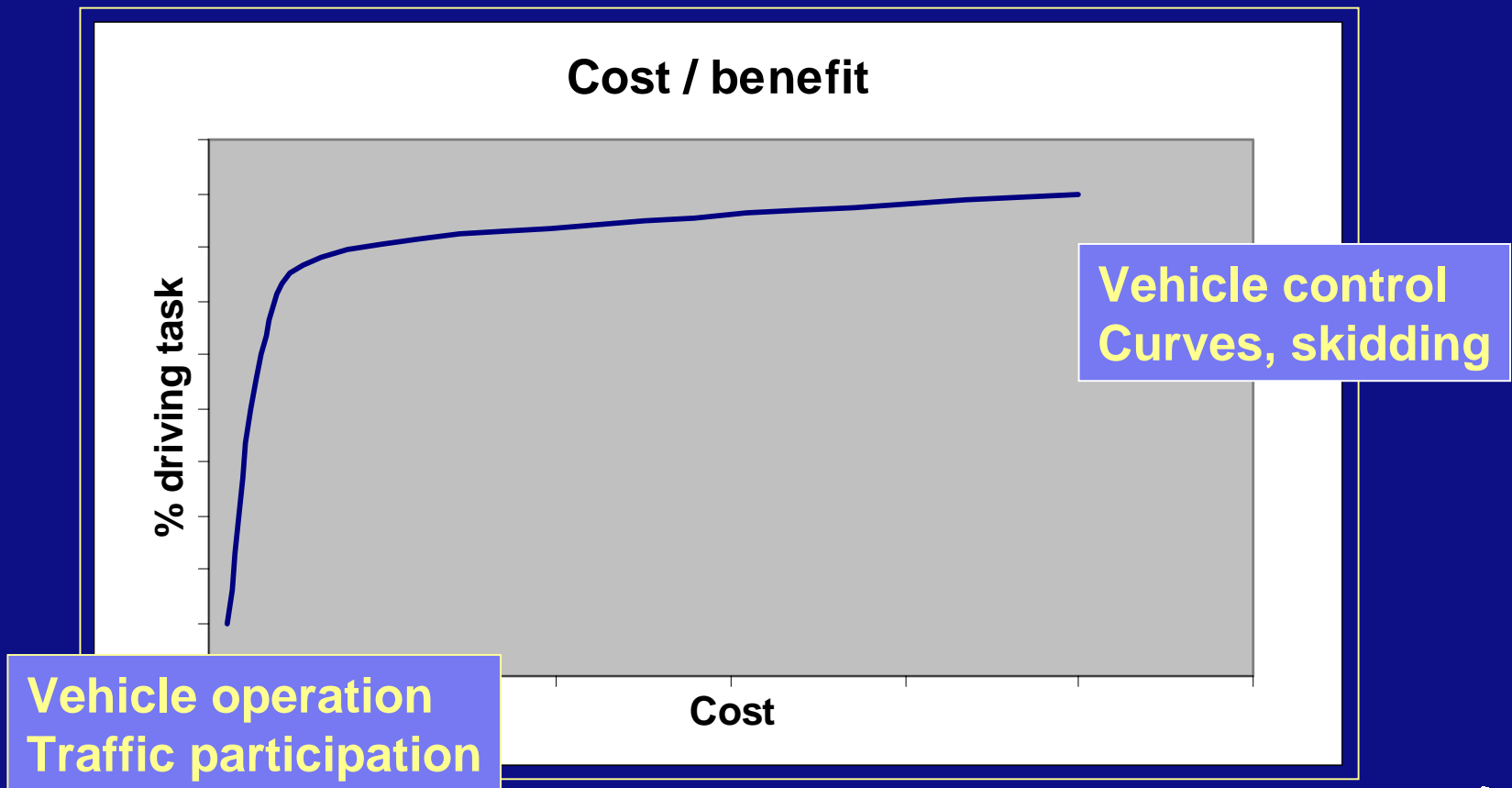
- Simulators are not perfect
  - Simulator is not a real car
    - Limited realism in all aspects
  - But you can control traffic!
- Instructors are not perfect
  - Some are really great
  - Cannot control traffic
- Combine best of both worlds
  - Simulator and instructor operate as a team
  - Aim at basic skills

# Driving simulators in the Netherlands

## One-liners

Driving tasks versus simulator cost

(ELSTAR)



# Driving simulators in the Netherlands

## One-liners

- Simulators can train basic skills
  - Vehicle operation
  - Traffic participation
- Simulators can train efficiently
  - Instructive situation on every intersection
  - Learn faster than in reality
- At the end of the curriculum less efficient
  - Situations, interactions & environment too simple
  - (although with different use of simulator . . . )

# Driving simulators in the Netherlands

## One-liners

- Simulators can train efficiently
  - Instructive situation on every intersection
  - Learn faster than in reality
- At the end of the curriculum less efficient
  - Situations, interactions & environment too simple
  - (although with different use of simulator . . . )
- Use simulators for what they are good at
  - Do the rest in practical lessons

# Driving simulators in the Netherlands

- Minimal legislation for driver training
  - 'Only the test is legislated'
- Driver training relatively long and expensive
  - 44 one hour lessons
  - average driver training = 2250€
- More than 100 systems currently in operation
  - Four different manufacturers
  - Focus on vehicle operation & traffic participation
- No 'hard evidence'
  - Expert reviews, student reviews
  - No classic validation studies

# Green dino



- Three channel projection system 3 x 70 deg.
- Basic mock-up
- Projected dashboard
- 'random' traffic, no scenarios
- Instructor console

# SimCenter

- Greendino simulators
- Regional centers
- in highschools
- start at 17 y old
- Students buy a package of simulator lessons (200 – 250 E)
- Practical driving in cooperation with 'associated driving schools'

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>>>GRATIS INTEST TIJDENS INTRODUCTIEPERIODE<<<<  
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SimCenter biedt een unieke kans om snel je rijbewijs te halen. Bij SimCenter start je in een geavanceerde rijnsimulator. Daardoor kan je al op je 17e beginnen!

Het is veilig; niet meteen het drukke verkeer om je heen. De basisvaardigheden leer je snel en efficiënt in stappen. Omdat je alleen traint op vaardigheden waar je zwak in bent, leer je in de simulator drie keer zo snel! Je bespaart in de simulator veel brandstof en onnodige kosten.

Resultaat: simulatielessen zijn 50% goedkoper dan lessen op de openbare weg. 16 simulatielessen besparen je 16 lessen op de openbare weg. Jouw voordeel: 250 euro!

www.SimCenter.nl

# Vstep



- 270 deg. projectionscreen (3 x 90 deg)
- Small mock-up with dashboard (Hyundai)
- Instruction with speech and CBT (photo, animations, video)

# Vstep

- Drivezones, Vstep simulators
- Regional centres
- Often near highschoools
- ‘will have 28 drivezones in all major cities’
- Students buy package (16 one hour simulator lessons (200-250E))
- ‘In cooperation with associated driving schools’



The image shows a screenshot of the DriveZone website. The header features the DriveZone logo and a photograph of a woman holding a driving license. The main content area is green and contains the following elements:

- Navigation menu:** A vertical list of buttons on the left side: 'Wat is DriveZone?', 'Hoe werkt het?', 'Pakketten', 'Nieuws', 'Vestigingen', 'FAQ', 'Inloggen', 'Aanmelden', 'About us', 'Gallery', 'Disclaimer', and 'Contact'.
- Section: 'Wat is DriveZone?'**
  - Text: 'DriveZone heeft een nieuwe en effectieve aanpak voor het rijbewijs B. Een innovatieve rij simulator met 270°-scherm, waarmee je op een realistische en veilige manier de basis van het rijden aanleert, speelt daarin een belangrijke rol. Verder bestaat de opleiding uit computer-based theorie training en praktijklessen. DriveZone gaat de komende jaren in alle grote steden rij scholen opzetten.'
  - Bullet points:
    - snel en goedkoop je rijbewijs halen
    - een effectieve combinatie van simulator, theorie en praktijk
    - op een leuke en veilige manier leren rijden
    - lespakket op maat
    - voor je 18e verjaardag beginnen met lessen
- Section: 'Kom langs en maak een gratis proefrit in onze rij simulator'**
- Image:** A photograph of a driving simulator with a 270-degree panoramic screen and a steering wheel.
- Section: 'Nieuws'**
  - Date: '09-09-2005'
  - Text: 'DriveZone opent nieuw simulatorcentrum in het ROC van Amsterdam'
- Section: 'Acties'**
  - Text: 'Kies een vestiging om onze lopende acties te bekijken.'

# VVCR & ANWB

- 180 deg projection screen
- Complete mock-up
- Virtual instruction (speech) + CBT
- Central instructor console
- 30 simulators (in clusters of 2 – 4)
- Scripted traffic, 500 predefined scenarios
- Fully integrated in curriculum (CBT, Simulator and practical driving lesson focused on specific subject)



# Police academy

- Driving simulator for advanced driver training
  - 'Basic driver training' police officer
  - Emergency driving
- Simulator is only 40% of the learning value
  - Students judge drivers' performance
  - Discussions on mentality and behaviour  
60% of learning value
  - Discussions improve traffic safety  
(Gregersen et al, 1999)



# Driving simulators in the Netherlands

## Conclusion & discussion

Driving simulators :

- Are a part of Dutch driver training
- Can be great training tools
  - only if applied correctly!
  - vehicle operation, traffic participation, high-order skills
- Are used in different ways
  - scripted scenarios / 'randomized' traffic
  - integrated with / prior to practical training
  - as a basis for discussions
  - as a marketing tool
  - not all business models may be successful